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UNIVERSITY
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LOGISTIKUM
Steyr
the logistics competence of the FH Upper Austria



smartBOX

An Austrian small loads mobility 4.0 solution

Hans-Christian Graf

Towards a smart hyperconnected era of efficient and sustainable logistics, supply chains and transportation

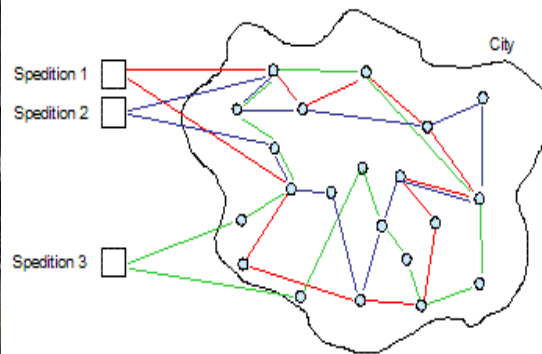
IPIC 2016 - 3rd International Physical Internet Conference

June 29-July 1, 2016 | Atlanta, GA USA

IPIC 2016

IPIC 2016

The Austrian project smartBOX

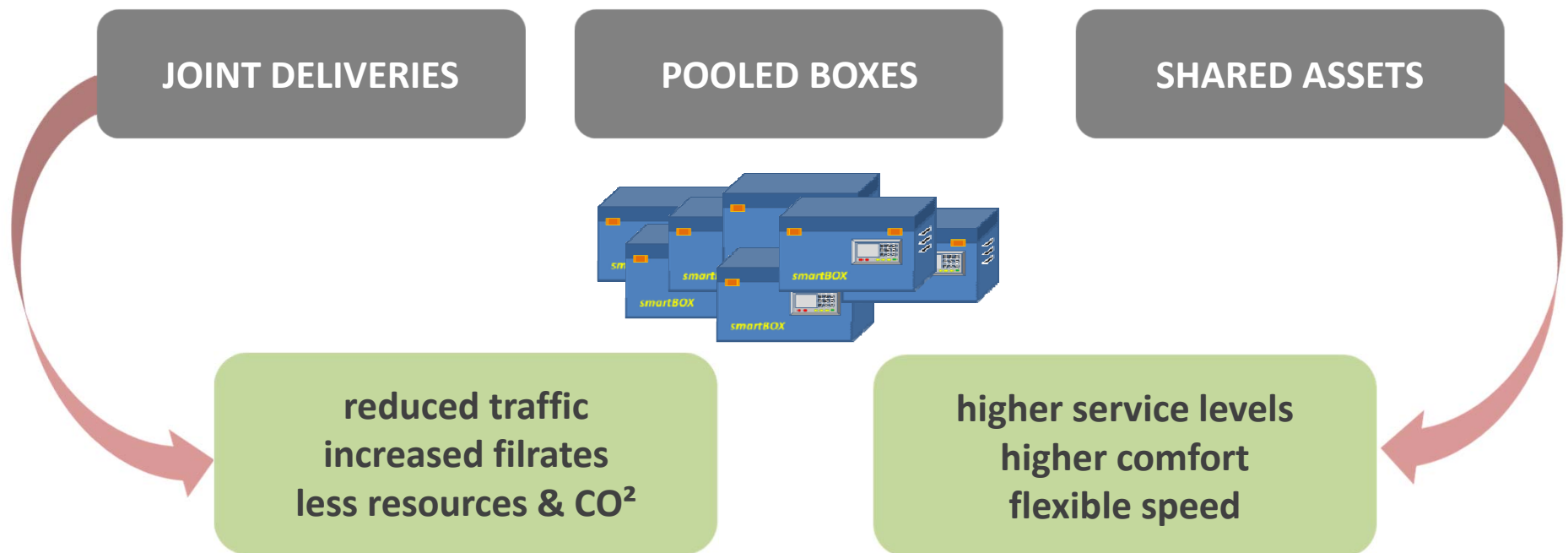


Project Targets

- Traffic reduction by **bundled & shared transports**
- Waste reduction by **re-usable boxes**
- Meeting business demands of **B2C as well as B2B**

The PI-vision of smartBOX

Mechanisms of **autonomous traffic optimization** together with **resource sharing models** for transports and delivery services
intelligent containers and boxes for small goods
information and communication technologies
manage the challenges of small freight mobility in (non)urban areas.



Definition of „small goods“

small goods = luggage + parcels + small pieced goods



The smartBOX approach

Project Content (1/2)

- Conception of a **standardized re-useable containers with an intelligent control system** and autonomous user security access (= the “**smartBOX**”)
- Development of a **pool system** in order to provide availability, exploitation and control of the smartBOX regarding B2B as well as private passenger traffic by using electronic track & tracing methods and web-based communication technologies
- Conception of extensively used **vandalism proof pick up and dropping terminals** in public areas as well as housing complexes. Adaption for freight transfer in the B2B sector.

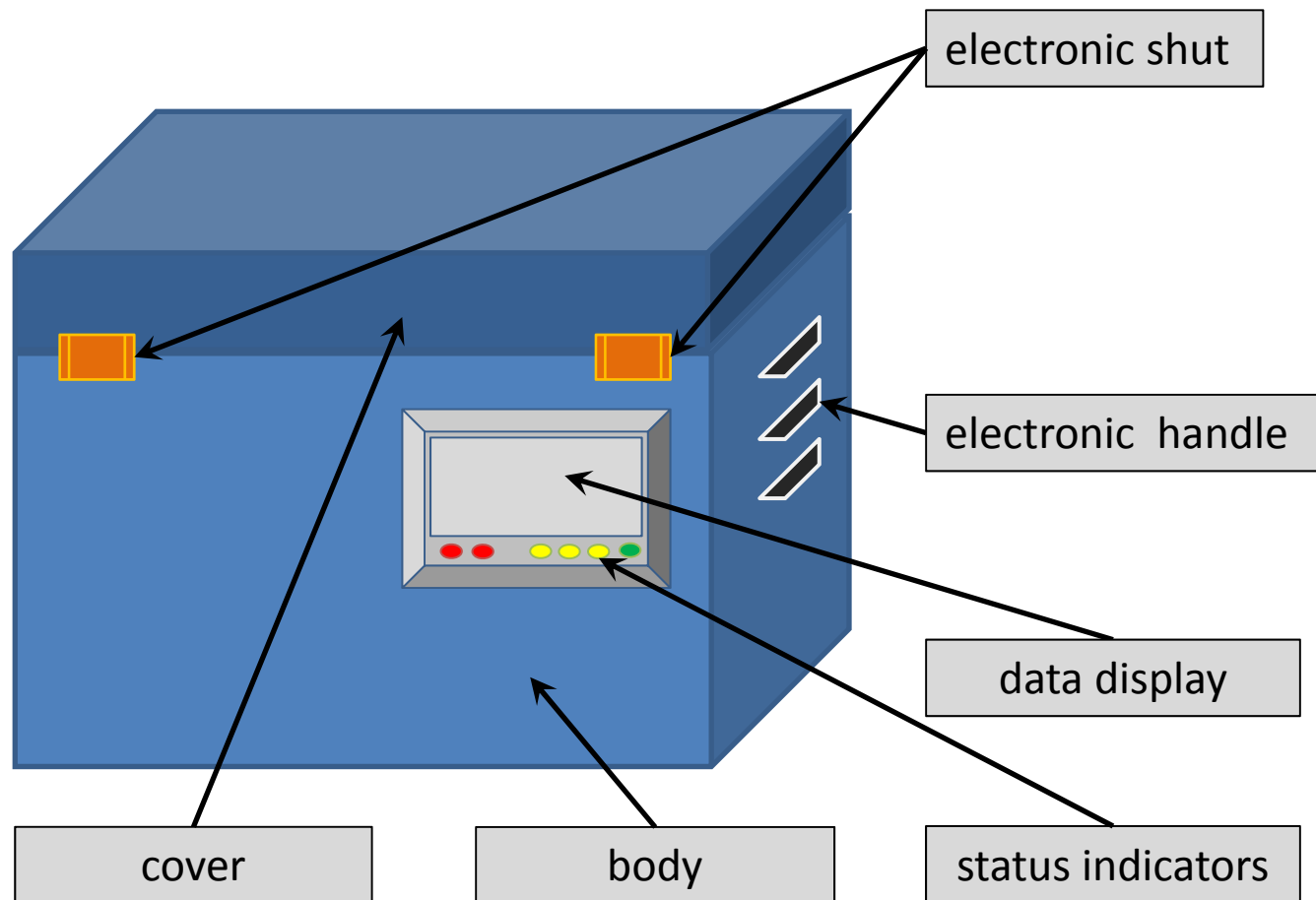
The smartBOX approach

Project Content (2/2)

- Conception of an **comprehensive, intermodal transport system** which enables bundled transports in order to prevent multiple trips for service providers in cooperation and for crowd logistics
- Conception of requested **IT-functionality** by considering transparency and data privacy for decentralized autonomous delivery systems.
- Conception of **business models** to provide favorable and distance-related transportation rates, which cover service-provider expenses and profits and are compatible (linkable) with presently used systems.



smartBOX: functional elements



smartBOX: the functionality

Typical business cases

→ E-Commerce B2C

- All kind of Online-Shopping (clothing, consumer electronics, books, ...)
- Deliveries to homes, terminals, specified addresses
- 24h service, business sharing, crowd logistics

→ Handling of Returns

→ Temporary depot for shoppers (locker – function)

→ Micro-depot (hub for last-last-mile deliveries)

- Via CEP services or via cloud logistics

→ B2B

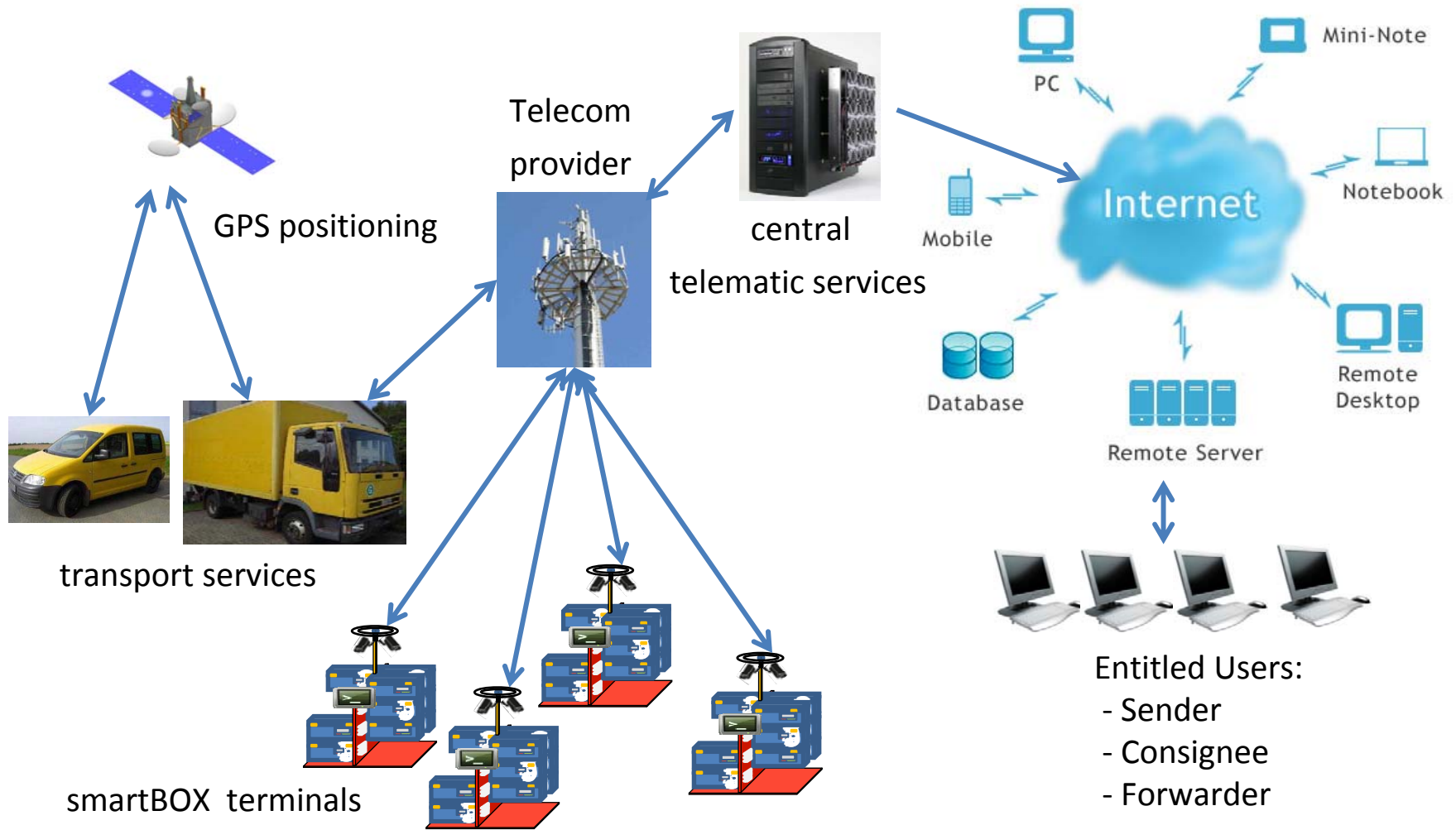
- compatibility to existing services
- Terminal and pickup function for maintenance services / spare parts

→ C2C

→ Pooling and management of empties



smartBOX: the ICT landscape

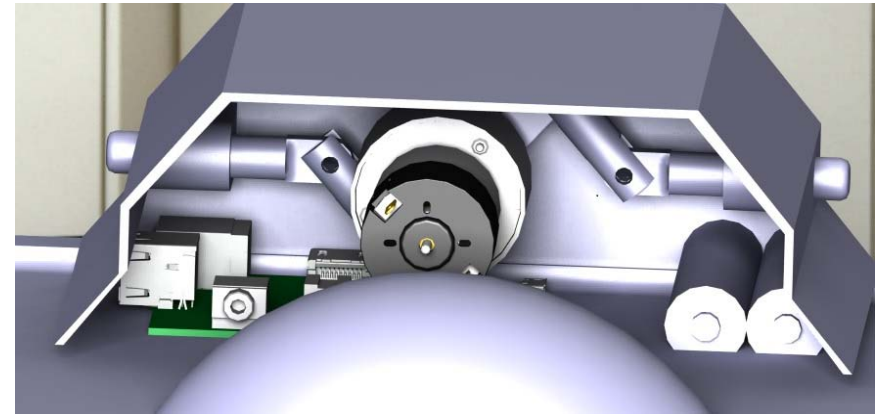
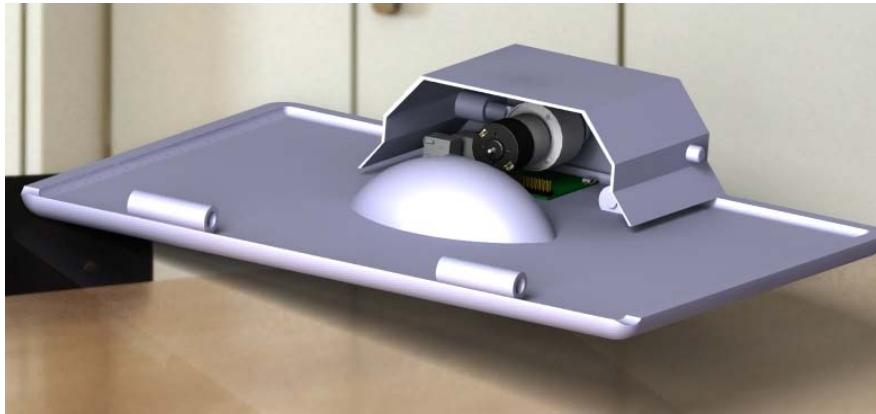


The developed smartBOX



- out of synthetics / plastics
- integrated display in side panel
- plug free connection – contactless transmission of energy and data

The developed smartBOX



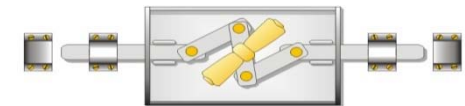
→ one or two integrated handles (according to size)

→ in lid integrated:

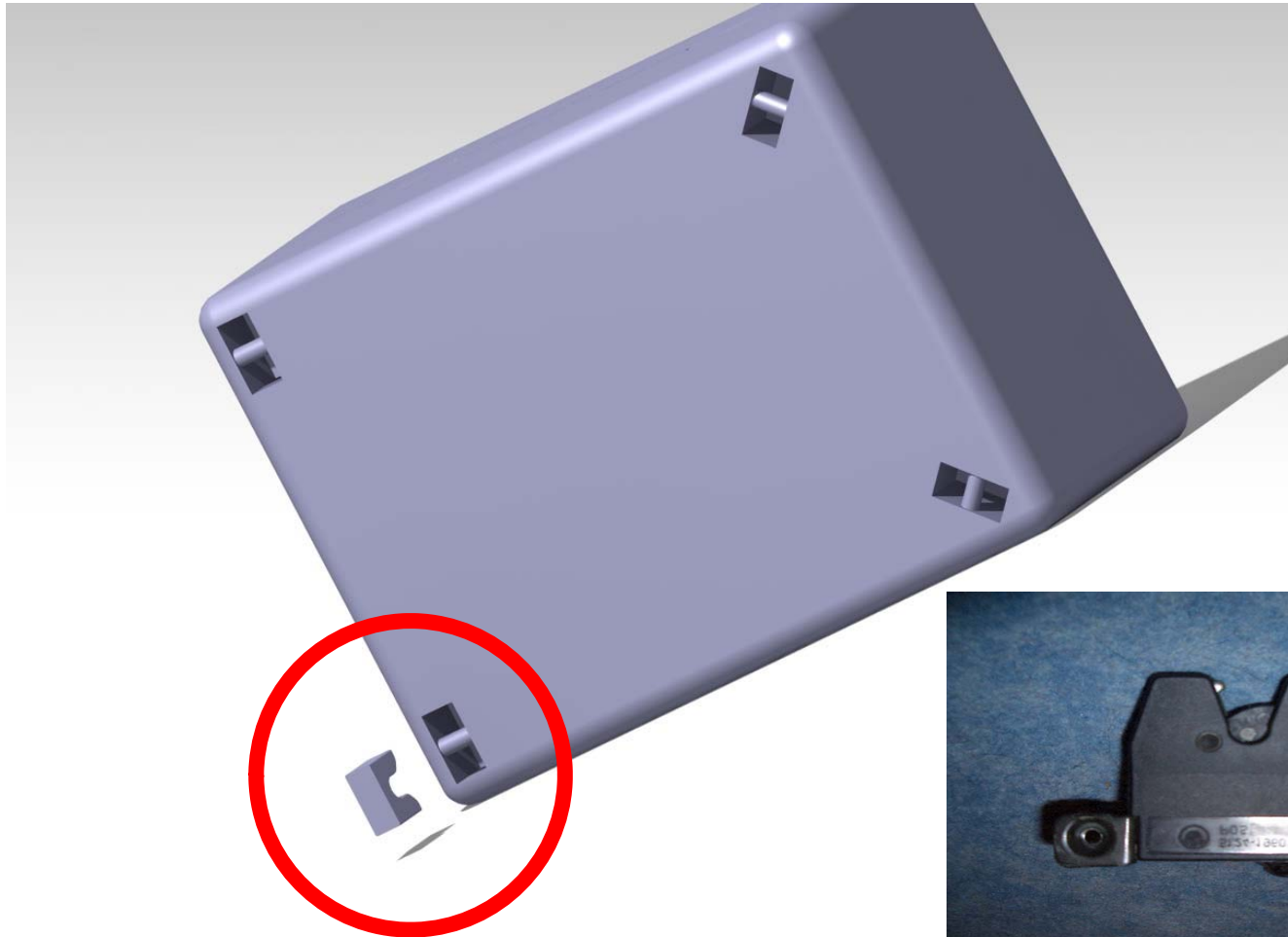
→ electronics

→ locker and geared motor

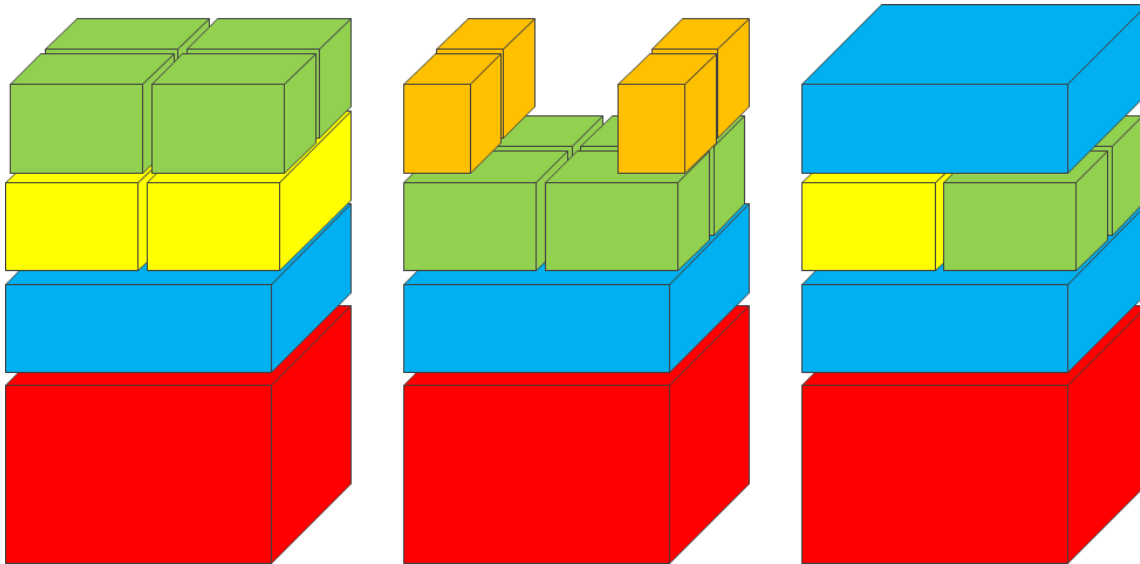
→ rechargeable battery



The smartBOX terminal interface



The smartBOX terminal



Sliding drawers to host the smart boxes

- loading from the top
- secured user access
- robust against vandalism

Requested infrastructure

- power connection and available internet

smartBOX: the vision's next steps

- Standardization of data and processes
- Interfacing of existing ICT systems
- Integration in existing services
- Definition of the final role of the hyper system
 - Bundling and order management (free and open system versus central control)
 - Definition of detailed data protection and access rules
- Details of financial clearing
- Pooling and management of empties
 - Inspection, maintenance, balancing and supply of empties
- Lobbying and partnering to change sharing attitudes
- Prototype projects
 - e.g.: implementation in public transport systems (trains, buses)
for very fast regular shipments and urgent spare parts supplies



Further information

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